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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/756,977	01/13/2004	Alan D. Kersey	CC-0700	3781

7590 11/29/2004

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EXAMINER
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LAU, TUNG S

ART UNIT	PAPER NUMBER
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2863

DATE MAILED: 11/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/756,977	KERSEY ET AL.	
	Examiner	Art Unit	
	Tung S Lau	2863	<i>AL</i>

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 January 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                                                        |                                                                                         |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                            | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

### DETAILED ACTION

1. Preliminary Amendment filed on 2-17-2004 is noted by the examiner.

#### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 7-15, 17-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Yokosawa et al. (U.S. Patent 6,261,232).

Regarding claim 1:

Yokosawa discloses a method for measuring the flow velocity of a fluid flowing through an elongated body substantially along the longest axis of the elongated body, the method comprising: providing an array of at least two ultrasonic sensor units disposed at predetermined locations along the elongated body (Col. 15, Lines 16-58), each sensor unit including an ultrasonic transmitter and an ultrasonic receiver (Col. 15, Lines 16-58, fig. 1, unit 46), each sensor unit providing a respective signal indicative of a parameter of an ultrasonic signal propagating between each respective ultrasonic transmitter and ultrasonic receiver (Col. 15, Lines 16-58), processing the transit time signals to define a convective ridge in the k-w plane; and determining the slope of at least a portion of the convective ridge to determine the flow velocity of the fluid (Col. 18, Lines 1-51).

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Regarding claim 11:

Yokosawa discloses an apparatus for measuring the flow velocity of a fluid flowing through an elongated body substantially along the longest axis of the elongated body, the apparatus comprising: an array of at least two ultrasonic sensor units disposed at predetermined locations along the elongated body (Col. 15, Lines 16-58, fig. 1, unit 46), each sensor unit including an ultrasonic transmitter and an ultrasonic receiver, each sensor unit providing a respective signal indicative of a parameter of an ultrasonic signal propagating between each respective ultrasonic transmitter and ultrasonic receiver (Col. 15, Lines 16-58, fig. 1, unit 46), and a processor that defines a convective ridge in the k-w plane in response to the ultrasonic signals, and determines the slope of at least a portion of the convective ridge to determine the flow velocity of the fluid (Col. 18, Lines 1-51).

Regarding claim 21:

Yokosawa discloses an apparatus for measuring the flow velocity of a fluid flowing through an elongated body substantially along the longest axis of the elongated body, the apparatus comprising: an array of at least two ultrasonic sensor units disposed at predetermined locations along the elongated body (Col. 15, Lines 16-58, fig. 1, unit 46), each sensor unit including an ultrasonic transmitter and an ultrasonic receiver, each sensor unit providing a respective signal indicative of a parameter of an ultrasonic signal propagating between each respective ultrasonic transmitter and ultrasonic receiver (Col. 15, Lines 16-58, fig.

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1, unit 46); means for processing the ultrasonic signals to define a convective ridge in the k-w plane, and means for determining the slope of at least a portion of the convective ridge to determine the flow velocity of the fluid (Col. 18, Lines 1-51).

Regarding claim 2, Yokosawa further discloses sampling the transit time signals over a predetermined time period; accumulating the sampled transit time signals over a predetermined sampling period, and processing the sampled transit time signals to define the convective ridge in the k-w plane (fig. 16, 23); Regarding claims 3, 13, Yokosawa further discloses orientation of the convective ridge k-w plane (fig. 16, 23); Regarding claims 4, 14, Yokosawa further discloses the transit time signals are indicative of vortical disturbances within the fluid (fig. 16-18, 23, Col. 15, Lines 16-58); Regarding claims 5, 15, Yokosawa further discloses performing a beam forming algorithm (fig. 16-18, 23, Col. 17, Lines 41-67); Regarding claims 7, 17, Yokosawa further discloses approximating the convective ridge as a straight line (fig. 8, 23); Regarding claims 8, 18, Yokosawa further discloses disposing the ultrasonic transmitter and ultrasonic receiver of a sensor unit such that the ultrasonic signal propagating there between is orthogonal to the direction of the fluid flow (Col. 17-18, Lines 48--51); ); Regarding claims 9, 18, Yokosawa further discloses determining the cross-sectional area of the elongated body; and determining the volumetric flow rate of the fluid (Col. 3-4, Lines 62-55, Col. 15, Lines 16-58); ); Regarding claim 10, Yokosawa further discloses signal is at least

one of the amplitude and the transit time (fig. 7, 8, 10); ); Regarding claim 12, Yokosawa further discloses the processor samples the ultrasonic signals over a predetermined time period, accumulates the sampled ultrasonic signals over a predetermined sampling period, and processes the sampled ultrasonic signals to define the convective ridge in the k-w plane (fig. 23); Regarding claim 19, Yokosawa further discloses the processor further determines the cross-sectional area of the elongated body (Col. 5, Lines 23-40) , and determines the volumetric flow rate of the fluid (Col. 17-18, Lines 48-18); Regarding claim 20, Yokosawa further discloses the parameter of the ultrasonic signal is at least one of the amplitude and the transit time (fig. 21, 23).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

a. Claims 6 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yokosawa et al. (U.S. Patent 6,261,232) in view of Gysling (U.S. Patent 6,609,069)


Yokosawa discloses a method and apparatus including the subject matter discussed above except using Capon Algorithm; Gysling discloses using Capon Algorithm in order to have accurate estimate results (Col. 6, Lines 38-46).

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Yokosawa to have the Capon Algorithm taught by Gysling in order to have accurate estimate results (Col. 6, Lines 38-46)

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tung S Lau whose telephone number is 571-272-2274. The examiner can normally be reached on M-F 9-5:30. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on 571-272-2269. The fax phone numbers for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TL



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